South Carolina Burden of Cardiovascular Disease

2002 REPORT

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

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EXECUTIVE SUMMARY: CARDIOVASCULAR DISEASE IN SOUTH CAROLINA

According to the American Heart Association, "more than one in four [South Carolina] residents suffer from some form of cardiovascular disease" (2001). In 2000, 13,679 people in South Carolina died of cardiovascular disease, making it the leading cause of death in the state. During that same year, heart disease and stroke accounted for 44,291 hospitalizations of South Carolinians.
The economic costs of cardiovascular disease nationwide are staggering. For 2001, the American Heart Association estimated that the cost of cardiovascular diseases nationwide would cost $298 billion in direct and indirect costs; this figure includes hospitalizations, physician services, medication, and lost productivity.

In 1999, South Carolina ranked fifth in the nation for stroke deaths, third in overall CVD deaths, and seventh in ischemic heart disease deaths. Cardiovascular disease causes over one third of all deaths in South Carolina, making it the leading cause of death in the Palmetto State. Portions of South Carolina, North Carolina, and Georgia associated with high stroke mortality rates have become known as the "Stroke Belt". The Pee Dee and coastal areas of South Carolina have an exceptionally high rate of stroke death, designating this region the "Stroke Buckle" of the "Stroke Belt." Those who suffer from, but do not die of, cardiovascular disease will almost certainly suffer a reduced quality of life because CVD prevents its victims from living on their own terms. Recovering from cardiovascular disease requires significant lifestyle changes for both the sufferer and perhaps his or her family. Indeed, South Carolina's condition is critical in terms of cardiovascular health.

Particularly hard-hit by cardiovascular disease are African American South Carolinians, who represent 30 percent of South Carolina's population and 13 percent of the nation's population. Further examination of available data shows that African Americans carry a disproportionate burden of CVD deaths, hospitalizations, and risk factors. African Americans also face higher risks of developing ischemic heart disease and suffer stroke deaths more often than whites. These higher illness rates result in ten years of lost life for African American South Carolinians and a stroke rate that is 50 percent higher than the national average.

In response to the crisis, the South Carolina Division of Cardiovascular Health (CVH Division), located in the Bureau of Chronic Disease Prevention and Health Promotion has developed goals and objectives that address cardiovascular disease (CVD). Committed to improving cardiovascular health in South Carolina, the CVH Division was established in 1998 and has worked via established partnerships within the state. Based on the significant toll that CVD takes on South Carolina residents, DHEC, in collaboration with its partners, is ready to implement a concerted action plan to address the challenges of this disease.

This report is a description of the impact of cardiovascular disease in South Carolina including modifiable risk factors, trends, and disparities. Comparisons when available between race, gender, age, as well as between state data and the national public health goals outlined in Healthy People 2010 (HP 2010), have been provided. The report was developed in collaboration with the CVH Steering Committee's Data/Risk Factor Subcommittee and Structure Subcommittee. The CVH Division's focus is on promoting community, institutional, and environmental change in the areas of physical inactivity, poor nutrition, tobacco use, hypertension, and high cholesterol.
Data resources to support the efforts of the CVH Division and their communities are provided in this burden report. It is our intent that these efforts will help improve the cardiovascular health of South Carolina's citizens.

Introduction

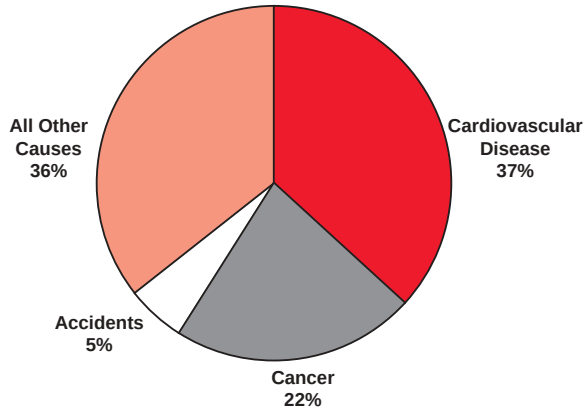
In 1900, the leading cause of death in the United States was pneumonia, killing 11.8 percent of the population. Cardiovascular disease was ranked fourth that year, causing only 6.2 percent of deaths in Americans. By 1997, cardiovascular disease had become the leading cause of death in the United States and in South Carolina. Referred to as one of the states in the "Stroke Belt," South Carolina has a high stroke mortality rate, especially among African Americans. In 2000, cardiovascular disease killed more people in South Carolina than all forms of cancer, pneumonia, influenza, and car accidents combined (Fig. 1). Furthermore, both cardiovascular disease morbidity and mortality increase with age and the population is aging rapidly. Within the next 25 years, the number of South Carolina citizens over age 60 is expected to double from our current 637,000 to more than 1,290,000. Because of South Carolina's population distribution, cardiovascular disease prevention and control presents a unique challenge for impacting minorities and the elderly.

Cardiovascular Disease

Deaths from cardiovascular diseases accounted for more than a third of all deaths in South Carolina with more women dying from cardiovascular disease than men in 1998, making it a killer for both sexes and not just a man's disease (Fig. 2). More specifically, coronary heart disease caused approximately one fifth of total deaths in the state with white men more likely to die from coronary heart disease. Additionally, stroke was responsible for 6 to 10 percent of all deaths with more women likely to die from stroke than men. Overall, African Americans were more likely to die than whites from cardiovascular disease.

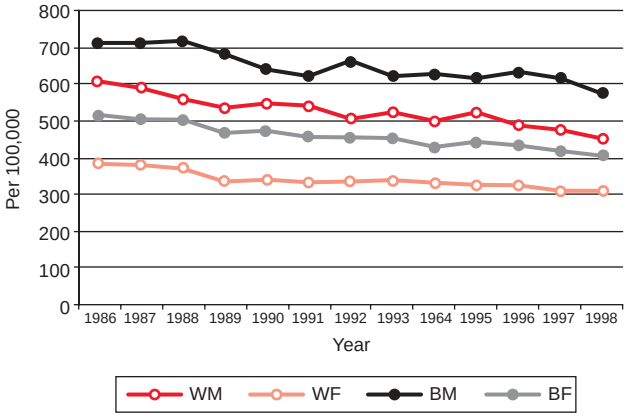
Overall, cardiovascular disease mortality rates dropped by 18 percent, from 450 per 100,000 population in 1986 to 370 per 100,000 population in 1998. However, South Carolina's cardiovascular disease mortality rate was still higher than the national rate of 353.4 per 100,000 population.

Figure 1. Leading Causes of Death in SC, 2000



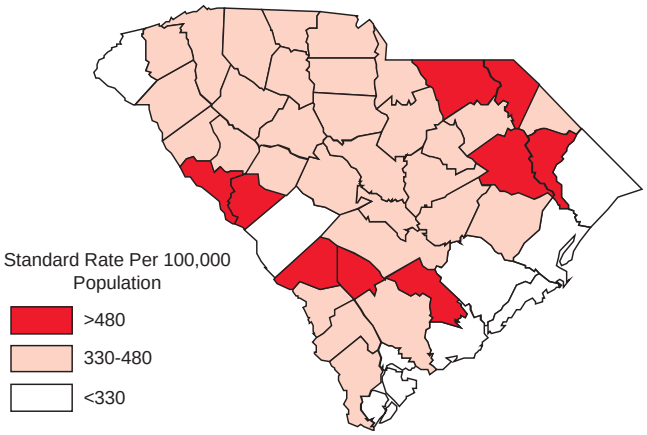
Source: DHEC Division of Biostatistics

Figure 2. Cardiovascular Disease Mortality Rates by Race and Sex, SC, 1986-1998



Source: DHEC Division of Biostatistics

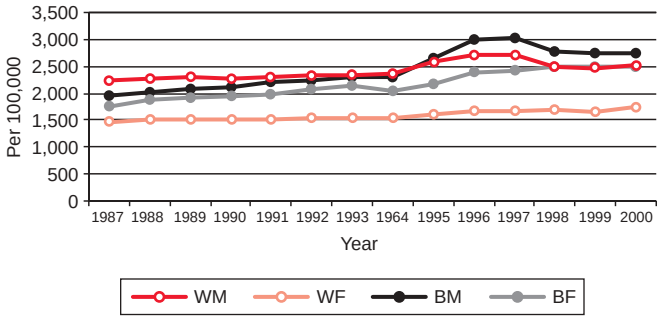
Figure 3. Mortality Rates for Cardiovascular Diseases by County, SC, 1998



Statewide Average: 369.8

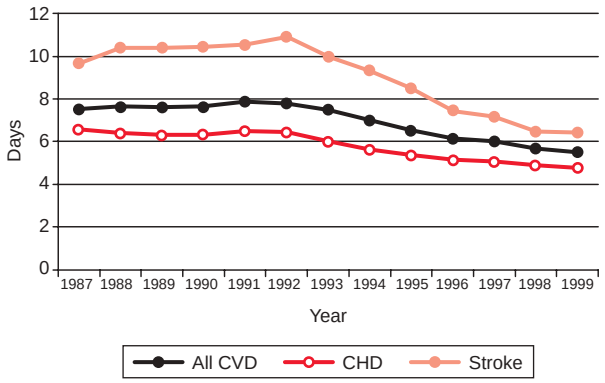
Source: DHEC Division of Biostatistics

Figure 4. Rates of Hospitalization for Cardiovascular Heart Disease by Race and Sex, SC, 1987-2000



Source: Budget and Control Board, Office of Research and Statistics

Figure 5. Average Length of Hospital Stay of Patients of Cardiovascular Disease, SC, 1987-1999



Source: Budget and Control Board, Office of Research and Statistics

In 1998, the average mortality rate for the state was 369.8 per 100,000 population. Bamberg, Barnwell, Chesterfield, Dorchester, Edgefield, Florence, Marion, Marlboro, and McCormick counties had the highest mortality rates for cardiovascular diseases (Fig. 3).

In 1999, there were 81,763 hospital discharges for cardiovascular diseases, accounting for 17 percent of total hospital discharges. Cardiovascular diseases accounted for 18 percent of hospital admissions among whites, while 14 percent of hospitalized African Americans were admitted because of cardiovascular disease.

The number of patients who were diagnosed with cardiovascular disease increased from 1987 to 1999 (Fig. 4). Moreover, the hospitalization rates of patients diagnosed with cardiovascular disease increased 22 percent, from 4,624 per 100,000 population in 1987, to 5,663 per 100,000 population in 1999.

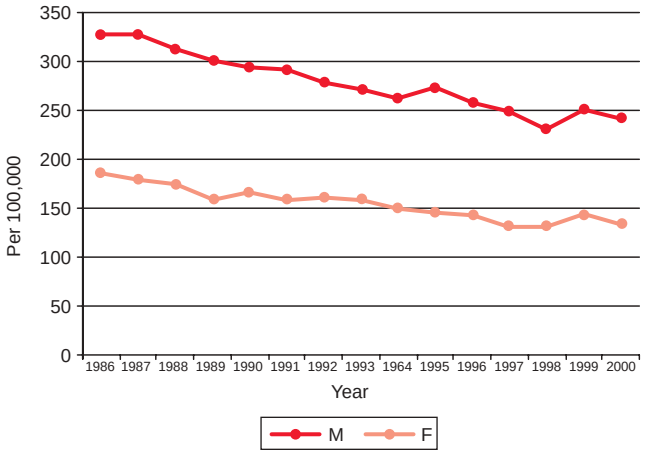
The total number of person-days patients were hospitalized was unchanged from 1987 to 1999 because hospital stays are shorter than they once were.
The average length of hospital stay for coronary heart disease, stroke and other cardiovascular diseases has dropped by 28-34 percent from 1987 to 1999. A major decline in the average length of hospital stays occurred from 1991 to 1999. Consequently, the overall average length of stay decreased by 30 percent, and the average length of stay for stroke fell by 40 percent (Fig. 5).

Coronary Heart Disease

Includes acute myocardial infarction, other acute and subacute ischemic heart disease, old myocardial infarction, angina pectoris, and other chronic ischemic disease.

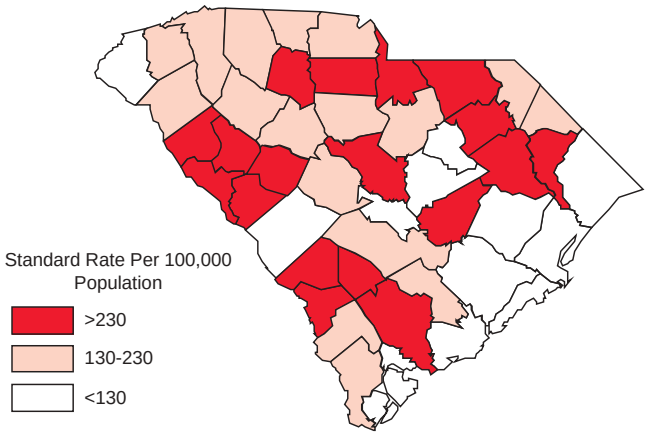
- Overall, from 1986 to 2000, coronary heart disease mortality rates decreased more than 25 percent (Fig. 6).
- Coronary heart disease mortality rates among men, which was higher than those of women, decreased more significantly than the rates for women. However, in 2000, coronary heart disease mortality rates among men was greater than the HP 2010 national objective of 166 per 100,000 population.
- In 1998, the average coronary heart disease mortality rate for the state was 164.7 per 100,000 population.
- Allendale, Barnwell, Chesterfield, Colleton, Edgefield, Fairfield, and McCormick counties had the highest mortality rates for coronary heart disease in the state (Fig. 7).
- In South Carolina hospitals, the number of patients with coronary heart disease increased from 1987-2000. While the rates of patients hospitalized for coronary heart disease remained unchanged for whites, they increased by more than 35 percent for African Americans (Fig. 8).
- White males have significantly higher rates than other race-sex groups, but African American males are catching up.

Figure 6. Coronary Heart Disease Mortality Rates by Sex, SC, 1986-2000



Source: DHEC Division of Biostatistics

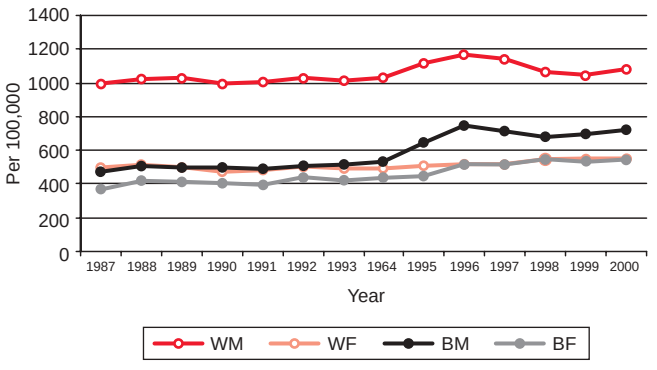
Figure 7. Mortality Rates for Coronary Heart Disease by County, SC, 1998



Statewide Average: 164.7

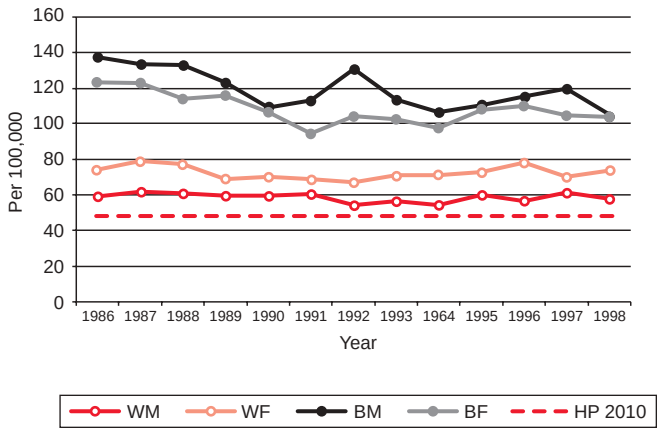
Source: DHEC Division of Biostatistics

Figure 8. Rates of Hospitalization for Coronary Heart Disease by Race and Sex, SC, 1987-2000



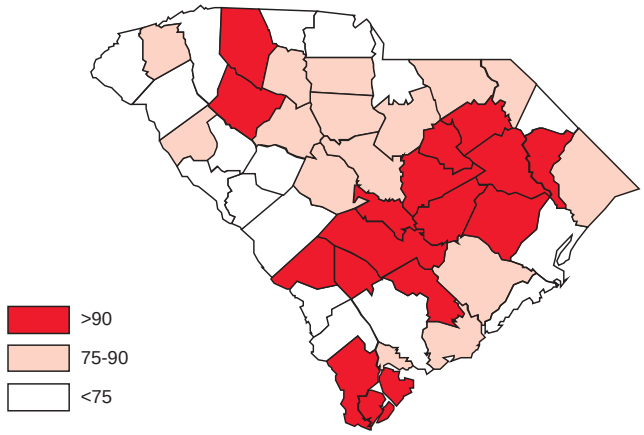
Source: Budget and Control Board, Office of Research and Statistics

Figure 9. Stroke Mortality Rates by Race and Sex, SC, 1986-1998



Source: DHEC Division of Biostatistics

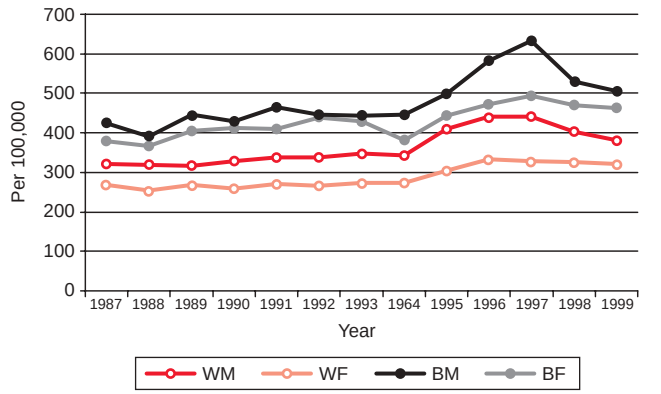
Figure 10. Mortality Rates for Stroke by County, SC, 1999



Statewide Average: 85 per 100,000

Source: DHEC Division of Biostatistics

Figure 11. Rates of Hospitalization for Stroke by Race and Sex, SC, 1987-1999



Source: DHEC Division of Biostatistics

Stroke

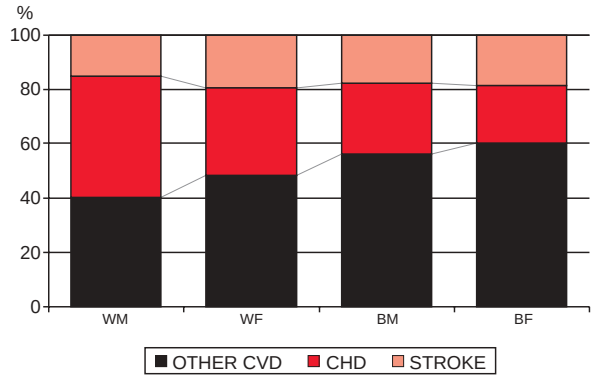
South Carolina is one of the states in the "Stroke Belt", and has one of the highest stroke mortality rates in the U.S. Stroke is the third leading cause of death in South Carolina, resulting in 2,904 deaths in 1998.

- Stroke mortality rates in South Carolina are greater than the Healthy People 2010 national objective for all race-sex groups (Fig. 9).
- Stroke mortality was higher among African Americans than whites. At a rate 80 percent higher than that of white men, African American men had the highest stroke mortality rate in all of the race-sex groups (Fig. 9).
- In 1998, the average stroke mortality rate for the state was 77.7 per 100,000 population.
- Counties with a high stroke mortality rate appear as a "belt" from the northeast to the southwest portions of South Carolina (Fig. 10)
- Bamberg, Calhoun, Clarendon, Darlington, Dorchester, Laurens, Lee, Orangeburg, Sumter, and Williamsburg counties had the highest mortality rates for stroke in 1999.
- The number of stroke patients seen in South Carolina hospitals increased 43 percent from 1987-2000. In 1987, the rate was 521 per 100,000 population. By 1999, it had risen to 745 per 100,000 population.
- Racial disparity in the hospitalization rates for stroke was the greatest for the middle-aged population; among them, African American men aged 55 had a rate comparable to white women 10 years older. Of the four race-sex groups, white women had the lowest hospital discharge rates for stroke (Fig. 11).

Unfortunately, some groups face higher risks of suffering the consequences of CVD than others. Representing 30 percent of South Carolinians, African Americans suffer disproportionately from cardiovascular disease. African Americans are at an increased risk of developing heart disease and stroke across all age groups and in all age, gender, race and socioeconomic groups.

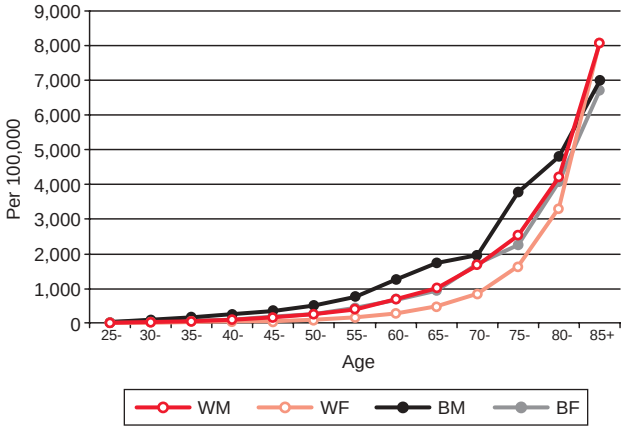
- African American men, whose mortality rate was more than 50 percent greater than that of white women, had the highest overall mortality rate from cardiovascular diseases in all race-sex groups (see Fig. 2, p. 2).
- African Americans and men had higher age-specific mortality rates than their counterparts with African American men more likely to die from cardiovascular disease 10 years before white women are projected to die from cardiovascular disease (Fig. 13).
- African Americans had higher hospitalization rates for cardiovascular disease than whites. In 2000, the hospitalization rates for African American men and women were 8 percent and 43 percent higher, respectively, than for their white counterparts (See Fig. 4, p.3).
- Racial disparities in hospitalization rates for cardiovascular disease increased from 1987 to 2000. In that time period, the rate rose about 40 percent for African Americans, an increase considerably higher than that of whites (15 percent).
- Both African American and white men had a higher hospitalization rate for cardiovascular disease than women of either race. White women had the lowest rate of hospitalization from CVD in all race-sex groups.
- Substantial racial disparities were apparent in the rate of emergency room (ER) visits for CVD. African Americans visited the ER for CVD more than twice as often as did whites. While men had a higher rate of ER visits for cardiovascular disease than women, African American men had the highest overall rate of emergency room visits in each of the race-sex groups (Fig. 14).

Figure 12. Distribution of Primary Diagnoses Among Patients Hospitalized for Cardiovascular Diseases by Race and Sex, 1999



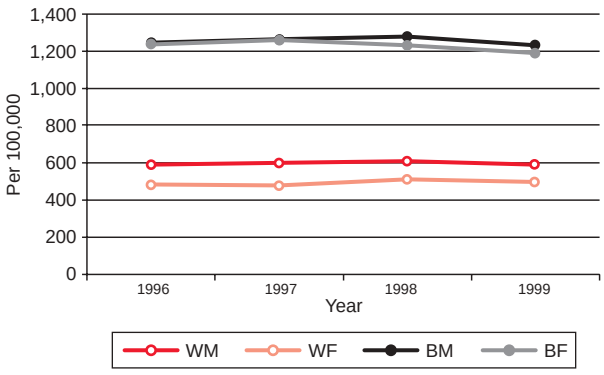
Source: Budget and Control Board, Office of Research and Statistics

Figure 13. Age-specific All Cardiovascular Diseases Mortality Rates by Race and Sex, SC, 1998



Source: Budget and Control Board, Office of Research and Statistics

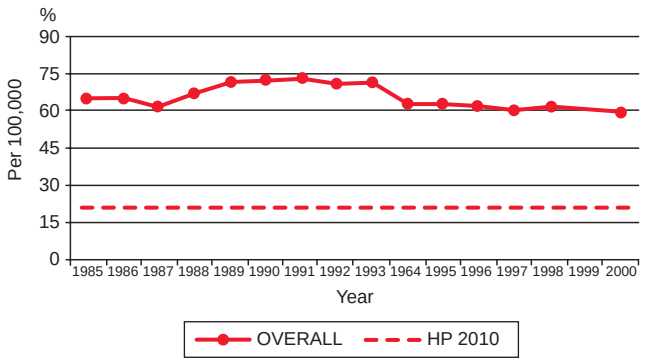
Figure 14. Rates of Emergency Room Visits for Cardiovascular Diseases by Race and Sex, SC, 1996-1999



Source: Budget and Control Board, Office of Research and Statistics

Cardiovascular diseases (principally coronary heart disease and stroke) are the nation's most common causes of death between both men and women of all racial and ethnic groups. The American Heart Association estimates that at least 61 million Americans have some form of cardiovascular disease, including high blood pressure. Studies have identified several factors that increase the risk of developing cardiovascular disease. Some of these risk factors can be modified or prevented. The most common modifiable risk factors for CVD are: tobacco use, insufficient physical activity, poor nutrition, high blood pressure (hypertension), high blood cholesterol, obesity, and diabetes. In this report we will address cardiovascular disease and the health-related behaviors that can be modified to lower the risks associated with CVD.

Figure 15. Prevalence of Physical Inactivity Among Adults in SC, 1986-2000



Source: Bureau of Epidemiology, BRFSS

Physical Inactivity

Physical inactivity is a term used to identify people who do not have regular physical activity as recommended. Physically inactive people are two times more likely to develop coronary heart disease than physically active ones. Despite the well-publicized benefits of physical activity, current data show little improvement in physical activity patterns among Americans over the past 20 years and prevalence of physical inactivity remains high in the U.S. and South Carolina.

- Up to 250,000 of all deaths per year in the United States were related to cardiovascular disease—about 12 percent of total deaths per year— can be attributed to a lack of consistent physical activity.

- Approximately two out of three adults in South Carolina were physically inactive (no regular or sustained physical activity) (Fig. 15).

- Overall, African Americans, especially women, had a higher prevalence of physical inactivity than whites.

- In order to reduce the risk of cardiovascular disease, 38 percent of South Carolina adults reported that they were advised by their doctor to exercise more to lower their risk of developing heart disease or stroke.

Nutrition

A diet high in fat and cholesterol increases the risk for coronary heart disease, stroke, and diabetes. The National Cancer Institute (NCI) and Produce for Better Health Foundation (PBH) recommends that people eat at least five servings of fruits and vegetables a day (5-A-Day). Although the majority of adults in the state do not meet the NCI recommendations of 5-A-Day, 59 percent of South Carolina adults reported eating fewer high fat or high cholesterol foods to lower their risk of developing heart disease or stroke.

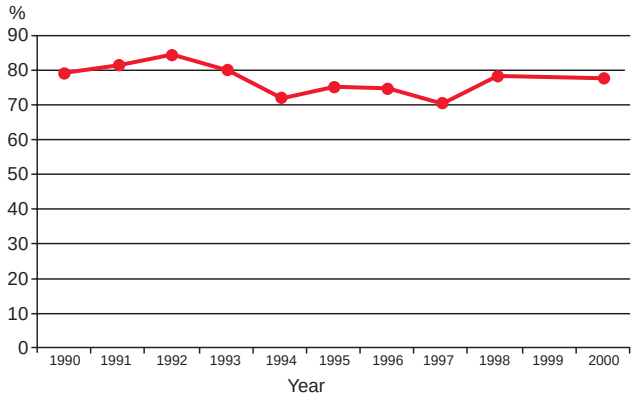
- In 2000, 30 percent of South Carolina adults were advised by their doctor to eat fewer high fat or high cholesterol foods to lower their risk of developing heart disease or stroke.
- In 2000, approximately three out of four adults in South Carolina did not eat the recommended amount of fruits and vegetables, which is slightly higher than the nationwide median of 77 percent (Fig. 16). Between 1990 and 2000, the prevalence was higher for African Americans compared to whites and greater than the nationwide median.

Tobacco Use

Cigarette smoking is the most important preventable cause of premature death in the United States accounting for about 430,700 of the more than 2 million annual deaths. With evidence that smokers have two to four times the risk of sudden cardiac death and more than twice the risk of heart attack than nonsmokers, cigarette smoking is the most frequent cause of cardiovascular disease.

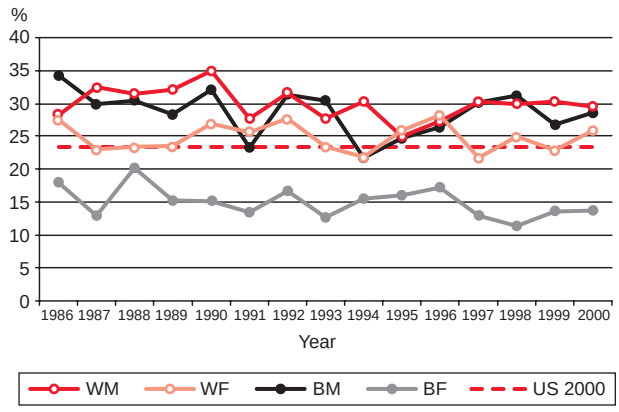
- Smoking cessation can reduce the risk of repeat heart attacks and death from heart disease by 50 percent or more.
- In South Carolina, approximately 26 percent of adults are current smokers, which is a little higher than the nationwide median of 23.2 percent in 2000, and significantly higher than the Healthy People 2010 objective of 12 percent.
- Overall, men had a higher prevalence of smoking than women, and whites had a higher rate than African Americans (Fig. 17).

Figure 16. Prevalence of Consuming Less Than Five Servings of Fruits or Vegetables a Day in SC, 1990-2000



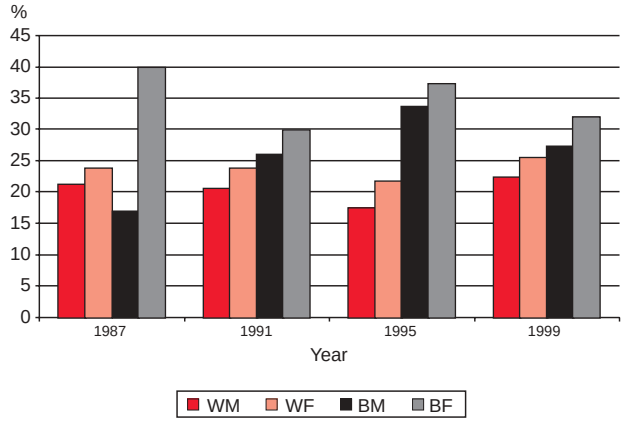
Source: Bureau of Epidemiology, BRFSS

Figure 17. Prevalence of Current Smoking by Race and Sex, SC, 1986-2000



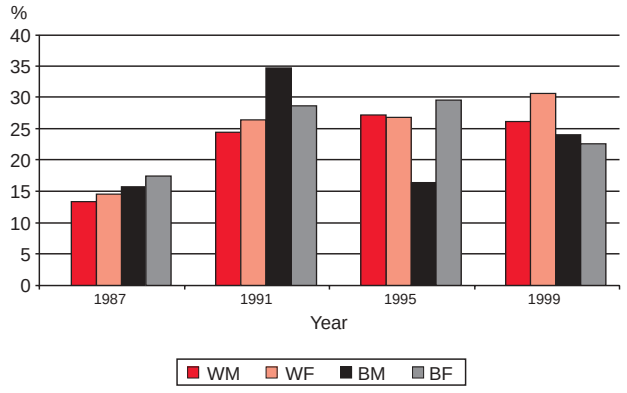
Source: Bureau of Epidemiology, BRFSS

Figure 18. Prevalence of Hypertension by Race and Sex, SC, 1987-1999



Source: Bureau of Epidemiology, BRFSS

Figure 19. Prevalence of High Cholesterol by Race and Sex, SC, 1987-1999



Source: Bureau of Epidemiology, BRFSS

High Blood Pressure (Hypertension)

High blood pressure (hypertension) killed 44,435 Americans and contributed to the deaths of about 210,000 in 1998. People with uncontrolled high blood pressure have three to four times the risk of developing heart disease and as much as seven times the risk of suffering a stroke as those with normal blood pressure. Many people have hypertension for years without knowing they are at risk; therefore, increasing the likelihood of developing heart disease and stroke increases.

- Approximately one in every four adults has hypertension, which is higher than the 1999 nationwide median of 24 percent and significantly greater than the Healthy People 2010 objective of 16 percent.
- The overall prevalence of hypertension increased slightly from 1987 to 1999, from 22 percent in 1987 to 26 percent in 1999. The prevalence of hypertension is significantly higher for African Americans compared to whites, and women have a higher prevalence than men (Fig. 18).

High Cholesterol

High blood cholesterol is a major risk factor for heart disease. In fact, the higher the blood cholesterol level, the greater the risk for developing heart disease or having a heart attack.

- Every 1 percent reduction in total cholesterol is linked to a 2 percent decrease in CVD risk.
- Approximately 30% of South Carolina adults have not had their cholesterol checked within the past 5 years.
- In 1999, 27 percent of South Carolinians had been told by a doctor or health professional that their blood cholesterol was high.
- The overall prevalence of high cholesterol increased from 14.6% in 1987 to 27.2% in 1999. Women had a higher prevalence of high cholesterol than men from 1987 to 1999 (Fig. 19).

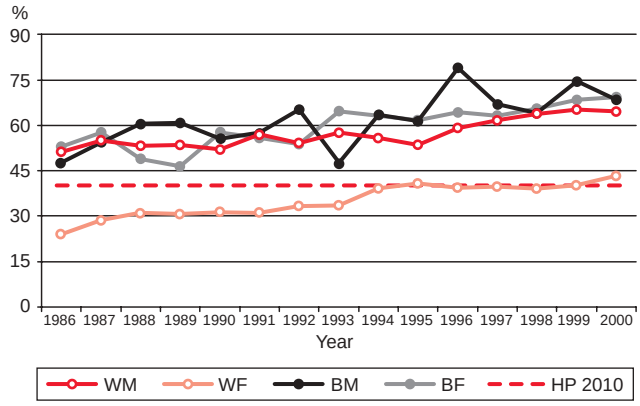
Overweight/Obesity

An acceptable range of body weight, measured by body mass index (BMI = (weight in kilogram) /(height in meter)^2) for adults is between 20 and 25. Adults with a BMI of 25 or greater are considered overweight; those who have a BMI over 30 or greater are considered obese.

Overweight is now recognized as a major contributor to cardiovascular diseases, and associated with considerable health risks and the prevalence of overweight and obesity has been constantly increasing nationwide since 1996. Approximately 107 million American adults are either overweight or obese, placing them at substantial risk of developing illnesses such as high blood pressure, high cholesterol, heart disease, stroke, and Type II diabetes.

- The prevalence of overweight in the state has increased from 40% in 1986 to 58% in 2000.
- In South Carolina, 58 percent of all adults are overweight, which is higher than the nationwide median and significantly higher than Healthy People 2010 objectives (Fig. 20).
- The prevalence of obesity is significantly higher for African Americans compared to whites and the nationwide median.

Figure 20. Prevalence of Overweight (Based on BMI) by Race and Sex, SC, 1986-2000

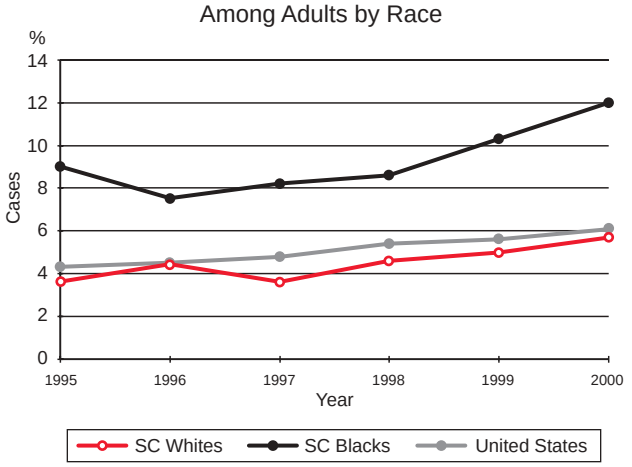


Source: Bureau of Epidemiology, BRFSS

Diabetes

South Carolina is one of the states that have the highest diabetes prevalence rates in the U.S. Approximately 280,000 South Carolinians have been diagnosed with diabetes and another 140,000 are not aware that they have the disease. According to the American Heart Association, clinical and statistical studies have found a strong correlation between high blood pressure, high cholesterol levels, and diabetes. These variables have always been a major risk factor for stroke and are recognized as a significant risk factor for coronary heart disease. Individuals with diabetes are at a twofold to fourfold increased risk

Figure 21. Prevalence of Diabetes Among Adults by Race

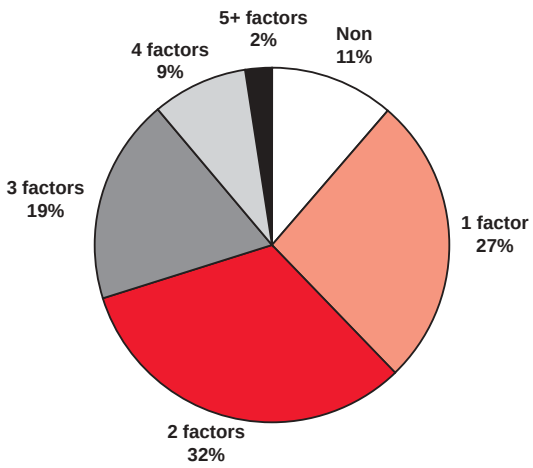


Source: Bureau of Epidemiology, BRFSS

of cardiovascular disease compared with individuals without diabetes.

- In South Carolina, approximately 7 percent of adults reported having diabetes in 2000.
- The prevalence of diabetes is significantly higher for African Americans compared to whites. African American females had the highest prevalence of 12.3 percent among all race-sex groups (Fig. 21).

Figure 22. Prevalence of Adults with CVD Risk Factor(s), SC BRFSS, 1997



Source: Bureau of Epidemiology, BRFSS

Risk Factor Clustering

Each risk factor can independently increase the risk of developing cardiovascular diseases as well as exacerbate other risk factors. This phenomenon is known as risk factor clustering, which greatly increases the risk of heart disease and stroke because the more risk factors a person has, the higher his or her chance is of developing cardiovascular diseases.

- In 1997, only 11 percent of adults in South Carolina did not report any cardiovascular disease risk factors (Fig. 22).
- Approximately two-thirds of South Carolina adults reported having two or more CVD risk factors.
- One out of ten South Carolina adults reported having four or more CVD risk factors.

COST OF CVD IN SOUTH CAROLINA

The economic costs of cardiovascular disease are staggering. In 2001, the cost of cardiovascular diseases in the United States was estimated at $298 billion, including health care costs and loss of productivity resulting from illness and death. Sudden death due to cardiac arrest, while not as costly as lingering illnesses caused by CVD, can be financially and emotionally devastating to surviving families. The average cardiac arrest victim is approximately 60 years old, an age at which many people are still quite productive.

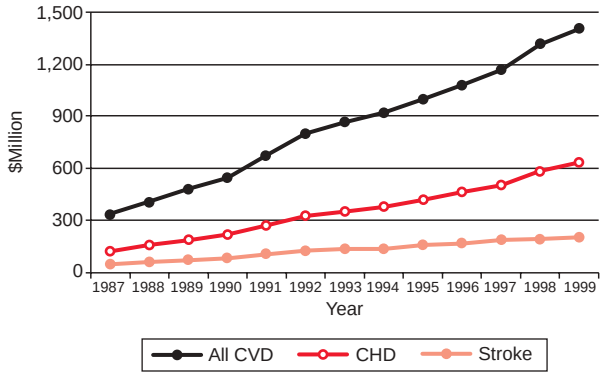
Medical care for hospitalized patients suffering from cardiovascular disease imposes a heavy direct economic burden in South Carolina.

- In 1999, cardiovascular disease was solely responsible for hospital charges totaling $1.4 billion (primary diagnosis of CVD). Of those charges, $629 million (45 percent) was for coronary heart disease and $204 million (15 percent) was for stroke (Fig. 23). Total hospital charges for treatment of cardiovascular disease patients increased by 330 percent from 1987 to 1999.

An increase in the number of patients and a rise in the average hospital charges per patient contributed to the dramatic increase in total hospital charges for cardiovascular disease treatment from 1987 to 1999.

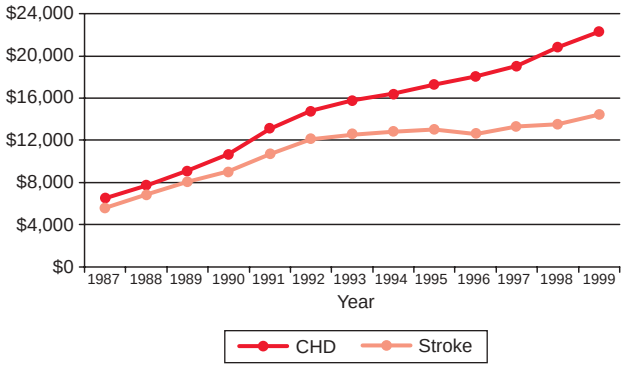
- The average hospital charges for coronary heart disease have tripled from $6,741 in 1987 to $22,277 in 1999. The average hospital charges for stroke increased by 160 percent, from $5,568 in 1987 to $14,411 in 1999.

Figure 23. Total Hospital Charges for Primary Diagnosis of Cardiovascular Disease, SC, 1987-1999



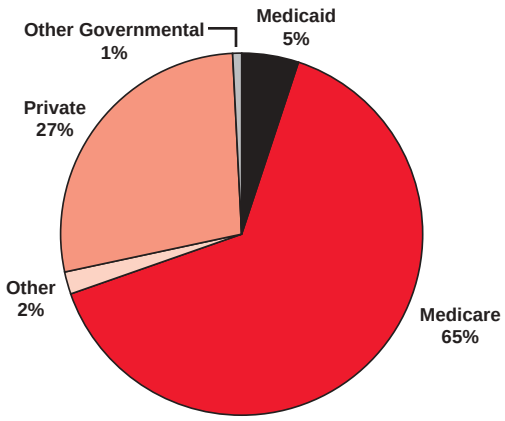
Source: Budget and Control Board, Office of Research and Statistics

Figure 24. Average Hospital Charges for Cardiovascular Disease, SC, 1987-1999



Source: Budget and Control Board, Office of Research and Statistics

Figure 25. Primary Payer Total Hospital Charges for Cardiovascular Diseases, SC, 1999



Source: Budget and Control Board, Office of Research and Statistics

Who paid for the hospitalization of patients suffering from cardiovascular disease?

- In 1999, Medicare and Medicaid were the main payers of 70 percent of the $1.4 billion in total hospital charges for cardiovascular diseases (Fig. 25).

- For patients under age 65, Medicare, Medicaid and other government sources were the biggest payers for 35 percent of the $583 million in hospital charges for cardiovascular diseases. They also paid for roughly 95 percent of the $822 million in hospital charges for people aged 65 and older.

Statistical and clinical research has shown that good cardiovascular health is strongly influenced by a person's access to quality primary health care. Those with higher incomes are more likely to have health insurance, which means that they may be more likely to visit their doctors regularly for routine check ups. Regular physical exams are very important in preserving good overall health and early detection and control of potentially serious health problems. Unfortunately, in the United States over 44 million people are either uninsured or underinsured, making it difficult for them to have a regular source of ongoing health care. There are over 40 million people who do not have a particular place to go to when they need health care or advice, especially among people aged 18 to 24. Only 76 percent of individuals below the poverty line had a regular source of primary health care.

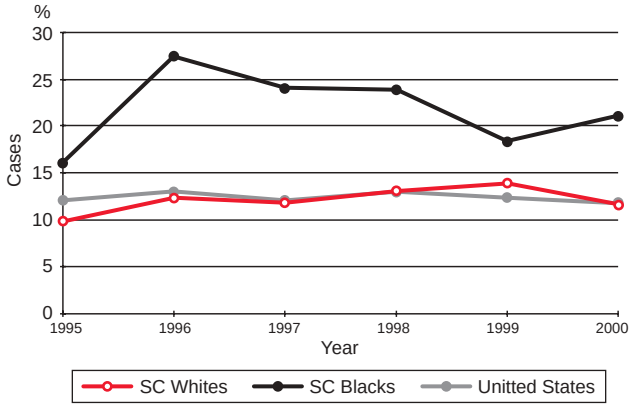
No Health Insurance

- In South Carolina, approximately 15 percent of adults have no health insurance, which is higher than the nationwide median of 13.6 percent. African Americans have a significantly higher prevalence of having no health insurance compared to whites and the nationwide median (Fig. 26).
- Multiple ER visits for cardiovascular disease might suggest that a patient lacks routine medical care for cardiovascular disease or a lack of medical care access. In 1999, the rate of multiple ER visits for blacks was three time the rate for whites. Men had a slightly higher rate of multiple ER visits than either black or white women (Fig. 27).

No Routine Check-up

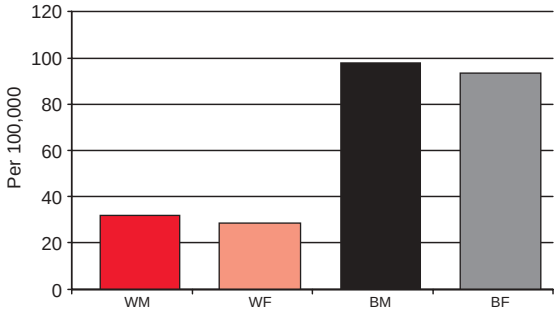
- In South Carolina, approximately 23 percent of adults reported that they had not visited a doctor for a routine check-up in the past year. This prevalence is lower than the nationwide figure of 28 percent (Fig. 28).

Figure 26. Percentage Reporting Having No Health Insurance



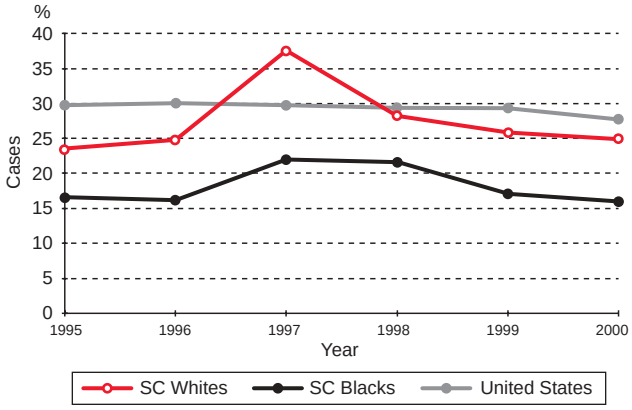
Source: Bureau of Epidemiology, BRFSS

Figure 27. Rates of Patients with Multiple Emergency Room Visits for CVD, SC, 1999



Source: Bureau of Epidemiology, BRFSS

Figure 28. Percentage Reporting Having No Routine Checkup In the Past Year



Source: DHEC Division of Biostatistics

The data presented in this report were compiled from a variety of sources including vital records, hospital discharge data, emergency room records, and the Behavioral Risk Factor Surveillance System (BRFSS). This section provides definitions, sources of data, and methods used in this report.

Population Data

Population data are mid-year population estimates for each calendar year from the South Carolina Budget and Control Board, Office of Research and Statistics.

Mortality Data

The South Carolina Department of Health and Environmental Control, Office of Public Health Statistics and Information Services, Division of Vital Records provided mortality data in this report based on information included on death certificates. The information is used to describe attributes of the decedent, including age, sex, and place of residence, as well as the underlying causes of death. The underlying cause of death was used for all analyses in this report. Standard cause specific death rates were calculated by dividing the number of deaths due to a specific cause, such as coronary heart disease or stroke, by the total number of people in the population, age-adjusted to the year 2000 Unites States population.

Hospital Discharge Data

Information on each hospital discharge is reported to the South Carolina Budget and Control Board, Office of Research and Statistics. The principal discharge diagnosis is primarily the same one responsible for the admission; it was used for all analyses in this report except where noted. Rates of hospitalization (or discharges) are calculated by dividing the number of discharges with a specific diagnosis by the total population, age-adjusted to the year 2000 United States population. These data include ONLY those cases treated in South Carolina hospitals. Cases treated in hospitals outside of South Carolina are NOT included.

Behavioral Risk Factor Surveillance System (BRFSS) Survey

The BRFSS is a random digit dialed telephone survey of South Carolina adults who are18 years of age or older. First administered in 1984, it is conducted on an on-going basis each year, and is used to collect information about the risk factors and risk behaviors related to the major causes of morbidity and mortality in South Carolina. The BRFSS is overseen by the South Carolina Department of Health and Environmental Control Bureau of Epidemiology and is designed to estimate the prevalence of behavioral risk factors and some chronic conditions at the state level. BRFSS data has limitations in terms of its capacity to obtain representation of all of the state's regions and population groups; therefore, county-specific percentages were calculated by combining adjacent counties to achieve an adequate sample size. Due to sample size limitations, only overall county-specific information could be calculated.

Age-Adjustment

The age distribution of a population changes over time and from place to place. Heart disease, stroke, and some other diseases are more common in older people; therefore, comparing disease rates across populations or periods of time can be misleading if the age distributions of the populations being compared are different. Age adjustment is used to account for the changing age distribution of the population. Moreover, in this report all rates have been standardized to the United States population in the year 2000.

Population-Adjustment

Due to small numbers in the population estimates for other racial and ethnic groups, African-Americans and Caucasians are the only racial categories described in this report and, for brevity's sake, will be referred to as blacks and whites in the charts. Minorities comprise 31 percent of South Carolina's population, with African Americans comprising 98 percent of this group.

DATA RESOURCES FOR CARDIOVASCULAR HEALTH

The purpose of this section is to outline heart disease and stoke data resources in South Carolina. It should be noted that these efforts are not all inclusive and the compilation of a more complete catalogue of resources in South Carolina is ongoing. Anyone wishing to provide information in order to make the resource catalogue more inclusive can send contributions to the following address:

SC DHEC
Bureau of Epidemiology
Epidemiology Surveillance & Program Division

1800 St. Julian Place
Suite 406
Columbia, SC 29204

Dedicated to developing disease surveillance for the state, SC DHEC created this division to support and assist programs such as the Cardiovascular Health (CVH) Program. The epidemiology staff has been instrumental in providing and verifying data sources and linkages for CVD, and assisting in program evaluation issues. Current projects include developing cardiovascular disease targeted fact sheets for the general population, African Americans, and women, as well as county specific cardiovascular disease fact sheets.

American Heart Association, South Carolina Council (AHA-SC)

400 Percival Road
Columbia, SC 29204
(803) 738-9540

The American Heart Association is the leading authority on heart and blood vessel diseases. Research at the American Heart Association is critical to reducing disability and death from cardiovascular diseases and stroke. CPR, life-extending drugs, pacemakers, bypass surgery, and surgical techniques to repair heart defects all exist thanks to research performed by the American Heart Association. Since 1984, the AHA-SC Council has had a collaborative agreement with DHEC to provide CVD prevention services in a variety of community settings.

South Carolina Stroke Task Force

The AHA-SC Stroke Task Force has established objectives to reduce the burden of stroke for the citizens of South Carolina. The Task Force consists of a diverse group of volunteers, including clinicians, researchers, professional associations, and health care professionals.

Carolina Medical Review

250 Berryhill Road, Suite 101
Columbia, SC 29210
(803) 731-8225

As a private, non-profit organization, Carolina Medical Review (CMR) is the Peer Review/Quality Improvement Organization for South Carolina. Funded by the Health Care Financing Administration, CMR assures that South Carolina's Medicare beneficiaries receive medically necessary health services furnished in the appropriate setting and that the quality of care provided meets professionally recognized standards of health care.

MUSC Hypertension Initiative of South Carolina

Medical University of South Carolina (MUSC),
Hypertension Initiative
CSB 826, 96 Jonathon Lucas Street
P.O. Box 250625
Charleston, SC 29425
(843) 792-6340

The Hypertension Initiative at the MUSC provides the Experts in Hypertension Seminar Series to physicians, to ensure that hypertension expertise is available in each of the four regions of the state. The trainings offer Continuing Medical Education units as well as certification as Hypertension Management and Control Specialists.

Tri-State Cardiovascular Health Data Partnership

The CVH Data Partnership between North Carolina, South Carolina, and Georgia began at the 1996 North Carolina Statewide Convocation to Prevent Heart Disease and Stroke. During the convocation, epidemiologists discussed CVD surveillance and evaluation with researchers sharing information. This partnership, now composed of public health professionals from academic institutions, the private sector, non-profit agencies, and state and local public health agencies, has continued as an avenue to share ideas, expertise, and resources for CVD data in the Tri-State area. Most recently, the three states assembled at the 1998 North Carolina CVD Data Summit to review data about heart disease and stroke and to plan future surveillance and evaluation efforts. As a follow-up, the CVH Data Partnership maintains a mailing list of partners and provides members with new information and publications. The partnership is considering the development of an electronic mailing list and/or website to facilitate ongoing communication between partners (please use Bureau of Epidemiology address to contact the partnership).

The South Carolina Primary Health Care Association

SC Primary Health Care Association
2211 Alpine Road Extension
Columbia, SC 29053
(803) 788-2778

The South Carolina Primary Health Care Association (SCPHCA) was formed in response to a need to make health care services available in medically underserved areas of South Carolina. South Carolina Primary Health Care Association membership offers opportunities to network with other people, agencies, governmental officials, and health centers to develop strategies, policies and programs that lead to the effective delivery of primary health care. The SCPHCA provides services such as: advocacy, research, information sharing, continuing education and training, shared services arrangements, technical assistance, training and consultation, project collaboration, policy monitoring and analysis, grant preparation assistance, clearinghouse activities, community development, and contract negotiations.

GLOSSARY

Age-adjusted death rate: a rate calculated based on a standard age distribution to enable comparison of rates in populations with different age structures

Angina: pain or discomfort in the chest that occurs when the heart does not receive enough blood

Atherosclerosis: deposits of cholesterol and other substances in the walls of arteries

Cardiovascular diseases: includes a wide variety of disease of the heart and blood vessels, including ischemic heart disease (heart attacks), high blood pressure, stroke, and hypertensive heart disease

Cholesterol: fatty substances in blood that gets deposited in blood vessel walls, causing atherosclerosis, when blood cholesterol levels are high

Current smoking: defined as someone who has smoked at least 100 cigarettes in his/her lifetime and smokes now

Diabetes: a chronic disorder of metabolism affecting the way the body uses digested food for growth and energy

HDL (**high-density lipoprotein**)**:** carries cholesterol away from other parts of the body back to the liver for removal from the body

Heart attack (also known as **myocardial infarction**)**:** death or damage to the heart muscle caused by an insufficient supply of blood due to blockage of one or more coronary arteries

Heart failure: condition in which the heart cannot pump enough blood to meet the body's needs

High blood cholesterol level: defined as having been told by a health care professional that your blood cholesterol level was high

Hypertension (also known as **high blood pressure**)**:** defined as having been told by a health care professional that your blood pressure was high

Incidence: the number, expressed as a rate, of new cases of a disease in a population

Ischemic heart disease (also known as **coronary heart disease**)**:** includes heart attacks and related problems caused by a narrowing of the coronary arteries

LDL (**low-density lipoprotein**)**:** contains most of the cholesterol in the blood and carries it to tissues and organs via arteries; it is the main source of damaging buildup and blockage in the arteries

Morbidity: the total number of cases of disease present in a population at a given time

Mortality: the total number of deaths due to a certain disease

Obese: defined as a body mass index [BMI] greater than or equal to 30.0 kilograms per meter squared

Overweight: defined as a body mass index (BMI) from 25.0 – 29.9 kilograms per meters squared; BMI equals weight in kilograms divided by height in meters squared; using weight in pounds and height in inches, BMI equals 705 times weight divided by height squared

Prevalence: the number of existing cases in the total population at a given time

Risk factor: a habit, characteristic, or finding on clinical examination that is associated with an increased probability of a disease

Stroke: occurs when blood vessels to the brain burst or become clogged by a blood clot or some other particle resulting in lack of blood flow and oxygen to the brain and death of nerve cells

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